method. And there are other obvious objections, from the point of view of protection of wild life.

RODENTS. *Porcupines* give trouble to certain crops—vegetables, mealies, etc. They are not easy to destroy. Miscellaneous Note by Pitman at page 831, Vol. xxix may be seen. Use of cyanide gas would be effective in burrows with few exits.

Rats, Bandicoots, etc. Cyanide gas methods in use in municipal areas are suitable. But the contribution, 'The rice rats of Lower Sind and their control,' by P. V. Wagle, M.AG. Vol. 32, pp. 330-338 should be read. In regard to rats damaging crops in South India, the notes on that subject by P. N. Krishna Ayyar, B.A., should be read. Perhaps the Sind method might have useful application to some of the Madras rats. The control of all kinds of harmful rodents is for the scientists to direct.

BANGALORE, R. W. BURTON
October 8, 1951. LT.-COL., I.A. (Retd.).

10. SOME NOTES ON THE MALABAR GREY HORNBILL [*TOCKUS GRISEUS* (Bath.)]

In the *Journal*, Vol. 43, page 102, I recorded a few notes on the nesting habits of the Malabar Grey Hornbill (*Tockus griseus*) and have subsequently had occasion to watch at different times two young birds kept in captivity by my brother Shamoon.

They were obtained by Br. Navarro of St. Xavier's College from nests at Khandala, and I am detailing below notes on the adult females taken from the nests along with the young.

The first female taken on 5th May 1943 had not finished her moult, the primaries being shorter than the secondaries; the second mother taken in 1950 had the first primary only about 2 inches long.

In both cases the innermost rectrices were new quills while the outermost pair were bedraggled and frayed indicating that the mould commenced on the inside, as is usual with most birds. The iris of one bird was noted as reddish-brown.

An attempt was made to tame the second bird but she refused to feed and was released in the garden where she clambered up to the topmost branches of a tree and sat motionless for a long time. A piece of raw cucumber tossed up, failed to arouse interest and one piece fell on to the top of its beak. After 15 minutes the cucumber was in the same position, the bird not having moved at all. After some time she disappeared and was not seen again.

The first bird tamed by Shamoon was the larger of two of different sizes taken from the nest on 5th May when they were a few days old. The smaller bird (a female) died after about a month. The first notes were made on 11th July when the bird was 70-75 days old. The iris was noted as grey as against red brown (presumably for the adult) in the Fauna. The beak was horny, the upper mandible slightly darker, and the lower with a greenish tinge. On 6th August, the

upper had two thin black lines running along both sides of the culmen, and the beak had developed a slight gap between the mandibles towards the tip (as in the open-bill stork). Uptil now the bill had straight cutting edges with no serrations.

The second naked squab taken in 1950 had the bill dirty bluish grey with the front half yellowish. The feet were still covered with flaky blue skin, the claws being horny and whitish below.

The young were voracious. They ate sliced cucumber, bananas and bits of raw meat, having a special weakness for the last. The bird was adept at catching small articles thrown at him but had to be 'prepared' otherwise was taken unawares. (Primrose, *J.B.N.H.S.*, xxvii, p. 951 records a large pied hornbill catching a swallow as it flew past.) The food was turned round and round in the beak and swallowed whole by the bird tossing back his bill and head. Food once swallowed was often brought up into the bill and sometimes rejected. Large pieces were often seen and felt in the gullet, and if the piece was too big to swallow the bird would get excited and open its wings in its efforts.

On the ground he squatted flat on his tarsus and did not normally hold his tail folded over his back like the African *Lophoceros* (Moreau, *Ibis*, 1940, p. 644) nor was any attempt made at plastering with his droppings which were indiscriminately voided. A nasal 'tain-tain-tain' was uttered all the time, apparently as a purr of satisfaction.

When sitting on one's shoulder he meddled with the ear and nose and often rapidly moved his beak against the cheek. He learned to respond to the owner's whistle which represented the call of the Indian cuckoo.

In September it was noted that though his wings were fully developed and he could fly well, he was reluctant to do so. His usual method of progress was to flap his wings rapidly a few times and then glide for some distance. When flying from one tree to another he would start from the top, glide down to a height of about 5 feet from the ground on the next and then immediately clamber to the top—prepared to glide again. I am inclined to believe that this is a mode of progression which could be used also by the female in case of necessity even with her primaries in moult. Not being caged, the bird would often stray into neighbouring gardens though returning home in the evenings. He was once found on a roadside tree attempting to catch stones pelted at him by local urchins. It was amusing to hear passers-by guessing his identity. The guesses ranged from woodpecker and koel to penguin! This bird disappeared one day in September.

The second youngster, when fully gorged would sit on his hocks on the bare ground and throw back his head with the beak pointing skywards. This position is presumably an adaptation for a vertical nest hole.

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August 8, 1951.